"My Work Is From the Heart"

## Subra Suresh Installed as President; Offers New Take on CMU Motto

■ Piper Staff

In a formal academic ceremony filled with all the regalia and pageantry of commencement, Carnegie Mellon officially inducted Subra Suresh as the university's ninth president on Friday, Nov. 15, the 113th anniversary of the university's founding by Andrew Carnegie.

The investiture ceremony continued with the inaugural theme "Crossing Boundaries, Transforming Lives," as Suresh compared the journey he took to arrive at CMU with experiences similar to its founder. But, he had his own take on the university's motto, "My heart is in the work," when he stated, "My work is from the heart."

The ceremony in Carnegie Music Hall opened with a stunning performance of Stephen Schwartz' (A'68) "Corner of the Sky" by Tony Award-winner Patina Miller (A'06). Several gave remarks welcoming Suresh to Carnegie Mellon, including Allan Meltzer, the longest-standing faculty member at CMU, Faculty Senate Chair Roberta Klatzky, Staff Council Chair John
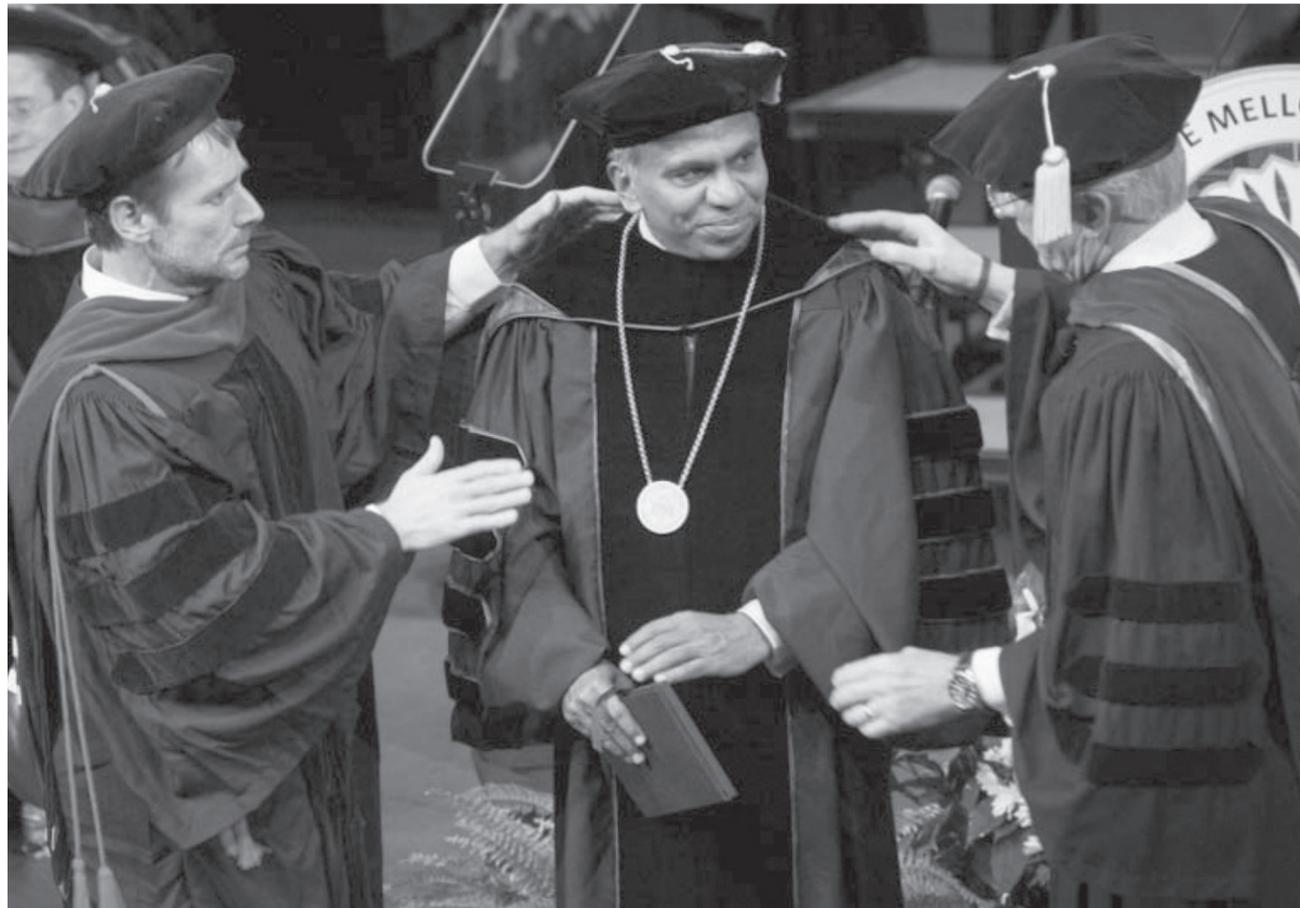
PHOTO BY TIM KAULEN

FACULTY MARSHAL JOHN MACKEY (LEFT) AND CHAIRMAN OF THE BOARD RAY LANE PRESENTED CMU PRESIDENT SUBRA SURESH WITH THE CMU CHARTER AND MEDALLION OF THE UNIVERSITY SEAL.

Tepper Quad

Largest Gift From CMU Grad To Create Academic Hub

■ Ken Walters

A $67 million gift from the charitable foundation of CMU alumnus and renowned investor David A. Tepper (TPR'82) will be used to create an academic hub, including a new home for the Tepper School of Business, on the Pittsburgh campus.

"Our vision for the new David A. Tepper Quadrangle builds on CMU's strengths, creating new interdisciplinary interactions for learning and research and connecting innovation to the business community," said CMU President Subra Suresh.

"I'm excited by President Suresh's and the university's vision to make CMU

Science of Learning

Simon Institute, New Consortium To Drive Educational Technology

■ Piper Staff

Carnegie Mellon has launched the Simon Initiative to accelerate the use of learning science and technology to improve student learning.

Named to honor the work of the late Nobel laureate and CMU Professor Herbert A. Simon, the initiative will harness CMU's decades of learning data and research to improve educational outcomes for students everywhere.

As part of the initiative, CMU will provide open access to the world's largest bank of educational technology data — detailed data about how people learn and how effective learning software can be designed and deployed.

CMU learning scientists have been performing research into every student interaction with learning software to reflect learners' activities for decades. This wealth of data now will be shared more broadly.

CMU also has called on experts from academia, industry and foundations to form the Global Learning Council (GLC).

A new consortium of education and technology research leaders, the GLC will develop standards, identify best practices and encourage engagement

Human Rights

Researchers Work To Find Justice for Victims

■ Shilo Rea

Immediately after Typhoon Haiyan hit the Philippines, the international community focused on providing food, shelter and medical assistance to survivors.

But for the families of the thousands feared dead or missing, a long-term recovery from the devastating storm also depends on managing the remains honestly and honorably. That's the role Carnegie Mellon's Alex John London and Jay D. Aronson are helping to play.

London and Aronson are working to improve standards and offer ethical guidelines for identifying victims in conflict and disaster areas to help provide justice to victims and their families.

London, professor of philosophy and director of the Center for Ethics and Policy, said CMU is the place for this type of humanitarian effort because "CMU is a hotbed of multi-disciplinary work with a strong emphasis on the ethical and policy dimensions of new technologies."

London and Aronson recently spoke at "The Missing: An Agenda For the Future," a high-level international conference that brought together the world's leading experts to discuss missing persons from armed conflicts, human rights abuses, disasters, migration, human trafficking, organized crime and other cases. Held at The Hague in the Netherlands, London and Aronson presented on standards, ethics

and data protection — a similar topic to a recent paper they published in "Science."

Aronson, associate professor of science, technology and society in the Department of History, argued that identifying the missing should not be a luxury and is crucial to enforcing human rights, clarifying history and facilitating justice. It also plays a critical role for the victims' families — confirming the

death of a loved one is a first step in the healing process and is often necessary for families to secure benefits and assert other rights, such as remarrying.

"Unfortunately, access to the resources and technologies to timely identify remains is significantly restricted by the willingness and ability of governments and other organizations to pay for them," said Aronson, who also

directs CMU's Center for Human Rights Science.

"This means that some victims of conflict and disaster have been identified (in Bosnia or in the aftermath of the 9/11 World Trade Center attacks), while others have not (in Rwanda or Haiti)," he said. "The 2004 Indian Ocean Tsunami illustrates the inequities: international efforts to identify the remains of victims were undertaken in Thailand, where there was a high density of Western tourists, but not in Sri Lanka, Indonesia, or other affected areas."

To that end, Aronson reiterated what he, London and the University of Pittsburgh's Lisa S. Parker called for in the Sept. 13 issue of "Science" — the creation of international structure to promote more equal access to forensic identification technologies.

London advocated for policies to ensure that samples and information gathered for the purposes of identifying missing people are not misused and that the process is strong enough to withstand legal scrutiny.

"If families believe that their genetic material will be used in ways that could result in their being subject to extra policing, political reprisal or the disclosure of health-related information, then they may be unwilling to participate in the identification process," London said.

"Key to ensuring trust are clearly articulated, enforceable procedures that safeguard the rights and welfare of participants and that ensure high standards of scientific quality."

AUTHORS EXPLORE PROPER WAYS TO RECORD DEATHS

The recent violence in Syria vividly demonstrates the difficulty — and importance — of accurately recording and estimating nonmilitary deaths in conflict areas.

"Counting Civilian Casualties: An Introduction to Recording and Estimating Nonmilitary Deaths in Conflict" surveys the challenges of this task, presenting and evaluating methods for ensuring that these tragic killings are properly acknowledged. Co-edited by Carnegie Mellon's Jay D. Aronson and Baruch Fischhoff and the University of Pittsburgh's Taylor B. Seybolt, the book contains contributions from the top researchers in the field, presenting case studies from Latin America, South America, Europe, Africa, the Middle East and Asia.

Published by Oxford University Press, the book stems from a 2009 workshop co-sponsored by CMU and Pitt and examines the most commonly used casualty recording and estimation techniques and evaluates their strengths and weaknesses. It also analyzes how figures are used — and sometimes misused — by governments, rebels, human rights advocates, war crime tribunals and others.

"One day, we may have an international convention, guaranteeing proper, respectful records of all those killed in conflicts," said Fischhoff, the Howard Heinz University Professor in the Department of Social and Decision Sciences and Department of Engineering and Public Policy. "When we do, the methods reported in this book will help to ensure that the work is done with the accuracy and dignity that individuals deserve. Perhaps a clearer picture of these tragedies will reduce them in the future, while helping the survivors today."

CMU Participates in Transform Africa Summit

■ Chriss Swaney

Sub-Saharan Africa is home to 650 million mobile phone subscribers, 50 million Facebook users and an increasing number of technology and entrepreneurial hubs. With that growth comes a demand for highly skilled workers, and that need is being addressed by Carnegie Mellon's graduate programs in Rwanda.

James H. Garrett Jr., dean of the College of Engineering and the Thomas Lord Professor of Civil and Environmental Engineering, discussed the importance of educating the next generation of African technology leaders and the role entrepreneurship plays in boosting local economies at the Transform Africa Summit in Kigali, Rwanda.

TransformAfrica
THE FUTURE DELIVERED. TODAY

He said CMU's graduate programs in Rwanda are designed to produce Africa's next generation of technology leaders and innovators.

CMU extended its global academic footprint in 2011 as the first major U.S. higher education institution to offer graduate engineering degree programs in Rwanda, a tech-savvy East African country building a knowledge-based economy. At present, CMU offers a master's degree in information technology, and will begin offering a second master's degree in electrical and computer engineering in August 2014.

"Our 16-month programs deliver both theory and practice to students, including successful summer internships at global tech companies," Garrett said.

In addition to Garrett, CMU representatives at the summit included: Bruce Krogh, Jendayi Frazer, Romayne Botti, Michel Bezy, Timothy Brown, Philip Miller, Hedda Schmidtke and Crystal Rugege.

Passion for Science

Franklin Institute Recognizes CMU Professors

■ Abby Simmons

Two Carnegie Mellon professors have joined the likes of Alexander Graham Bell, Thomas Edison, Albert Einstein and Jane Goodall.

Edmund M. Clarke and Mark H. Kryder have been named by the Franklin Institute in Philadelphia as recipients of its annual awards honoring leaders in science, engineering, technology and business.

The program preserves Benjamin Franklin's legacy.

Clarke is the recipient of the 2014 Bower Award and Prize for Achievement in Science, which includes a gold medal and a cash prize of $250,000, and Kryder is the recipient of the 2014 Benjamin Franklin Medal in Electrical Engineering. They will receive their awards at a ceremony and dinner on April 24, 2014, in Philadelphia.

"Mark Kryder and Edmund Clarke have each made distinctive and important contributions to information technology in our time, and they have each had a transformative impact on the way computer hardware, software, and systems are designed and developed. Carnegie Mellon is very proud that two of the university's outstanding faculty members are being honored in the same year by an institution with the global stature of the Franklin Institute," said CMU President Subra Suresh, who received the 2013 Benjamin Franklin Medal in Mechanical Engineering and Materials Science.

Edmund M. Clarke

Clarke, the FORE Systems University Professor of Computer Science and professor of electrical and computer engineering, is being honored "for his leading role in the conception and development of techniques for automatically verifying the correctness of a broad array of computer systems, including those found in transportation, communications and medicine."

These techniques, known as Model Checking, analyze the logic underlying
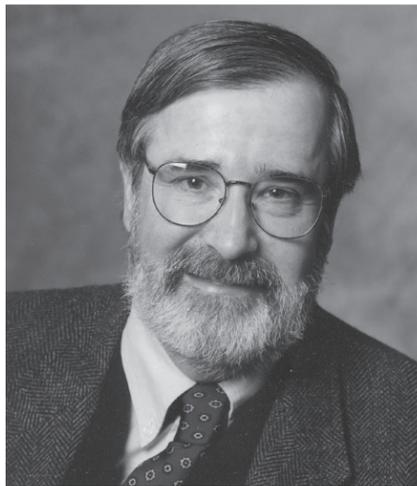
EDMUND M. CLARKE

a design, much as a mathematician uses a proof to determine that a theorem is correct. The automated method for identifying design errors considers every possible state of a hardware or software design and determines if it is consistent with the designer's specifications. Clarke implemented the first Model Checker in 1982, the same year he joined CMU's faculty.

He directs Computational Modeling and Analysis of Complex Systems, a National Science Foundation project that is extending Model Checking and other formal verification techniques to produce insights into a variety of complex systems, from embedded computer systems to cancer.

Clarke previously won the Association for Computing Machinery's (ACM) A.M. Turing Award, often referred to as the "Nobel Prize of Computing," with E. Allen Emerson of the University of Texas at Austin and Joseph Sifakis of the University of Grenoble in France, for their pioneering work on Model Checking. He also received the ACM's Paris Kanellakis Theory and Practice Award and CMU's School of Computer Science (SCS) Allen Newell Award for Research Excellence with Emerson, SCS Dean Randal Bryant and SCS alumnus Kenneth L. McMillan, now with Microsoft Research, for their invention of Symbolic Model Checking.

Mark H. Kryder

Kryder, University Professor of Electrical and Computer Engineering, is being recognized along with Shunichi Iwasaki of Japan's Tohoku Institute of Technology "for the development and realization of the system of Perpendicular Magnetic Recording, which has enabled a dramatic increase in the storage capacity of computer-readable media."

Kryder and Iwasaki are receiving one of six Benjamin Franklin Medals awarded in 2014. Other medal winners are being recognized for leadership in chemistry, earth and environmental science, life science, mechanical engineering and physics.

MARK H. KRYDER

Kryder joined CMU's faculty in 1978 and founded the university's Magnetics Technology and Data Storage Systems centers (DSSC) in 1983 and 1990, respectively. Under his direction, the DSSC became the world's largest academic research center in the field of data storage technology.

From 1998 to 2007, he was senior vice president of research and chief technical officer at Seagate Technology. During this time, Seagate introduced perpendicular recording technology and full disk encryption, both of which are used on hard disk drives today. He also initiated the company's program on Heat Assisted Magnetic Recording (HAMR), which Seagate recently announced was used to demonstrate an information

storage density of one terabit per square inch. Upon retiring from Seagate in 2007, he returned to CMU to continue research on HAMR and to initiate a research program on materials for spin torque transfer random access memory.

Kryder has published more than 370 papers and holds 24 patents in the field of magnetic memory and storage technology. He is an elected member of the NAE and a fellow of the American Physical Society and the IEEE, which has bestowed three awards upon him. Kryder's other honors include the American Institute of Physics' George E. Pake Prize and the Public Service Medal of Singapore.

Stockholm Prize

Nagin Wins Top Criminology Award

■ Abby Simmons

Daniel S. Nagin was awarded the 2014 Stockholm Prize in Criminology for his work in helping to reshape the use of prison and community-based correction programs based on evidence of what works — and what doesn't.

The international prize, sponsored by the Swedish Ministry of Justice with major contributions from the Torsten Söderberg Foundation, is awarded annually for outstanding achievements in criminological research or for the application of research results by practitioners for the reduction of crime and the advancement of human rights. Nagin will share the award with Stanford University's Joan Petersilia. They will be honored at the 2014 Stockholm Criminology Symposium, set for June 9-11.

"Professor Dan Nagin's insightful scientific approach to the study of incarceration has already had impact on one of America's most pressing social concerns, one that affects individuals, families and government at all levels. The Stockholm Prize is a well-deserved recognition of his powerful contributions to his field, and an endorsement of the importance of serious research in criminal justice as a contribution to the social good," CMU President Subra Suresh said.

The Teresa and H. John Heinz III University Professor of Public Policy and Statistics and associate dean of faculty at the Heinz College, Nagin led

DANIEL S. NAGIN

THREE
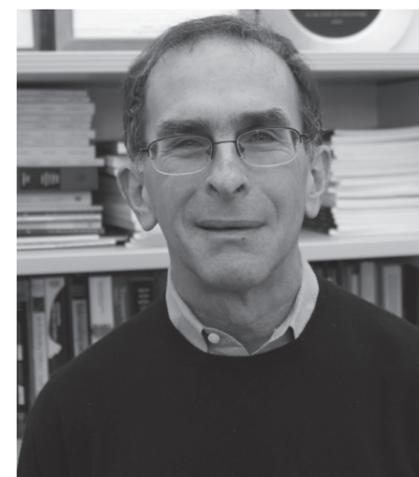
Bryant, Lehoczky Stepping Down as Deans in 2014

■ Piper Staff

Randal Bryant, dean of the School of Computer Science (SCS), and John Lehoczky, dean of the Dietrich College of Humanities and Social Sciences, have announced that they will step down at the end of the academic year.

Lehoczky, the Thomas Lord University Professor of Statistics, will return full time to his faculty position in the Department of Statistics. Bryant, a University Professor of Computer Science, will return full time to his faculty position in the Computer Science Department after a one-year sabbatical.

Prior to becoming dean of SCS, Bryant was head of the Computer Science Department from 1999 to 2004. He is recognized for his research on Binary Decision Diagrams, which have been widely used in industry to verify and diagnose the flaws in computer hardware and software.

As dean, Bryant has been instrumental in fostering research in data-intensive computing at CMU and at a national level. CMU's strengths in data storage systems, parallel computing, natural language processing and machine

RANDAL BRYANT

learning have enabled the university to become a leader in big data computing.

Bryant also was directly involved in the creation of the software developer certification project. Conducted in conjunction with the Kenya Information and Computation Technology Board and funded by the World Bank, the activity created a worldwide test to measure the qualifications of entry-level software developers.

JOHN LEHOCZKY

Computer Science Professor Guy Blelloch will chair the committee to search for Bryant's replacement.

Lehoczky served as head of the Department of Statistics from 1984 to 1995 and has led the Dietrich College since 2000. During his tenure, Lehoczky has overseen the launch of the college's ambitious Humanities Initiative, which created the Humanities Scholars Program, the Humanities Center and the

Center for the Arts in Society.

He also is responsible for fostering research in the brain sciences and has been a strong advocate for developing CMU international programs such as the Center for International Relations and Politics.

Lehoczky is well known for his application of stochastic modeling to problems in finance, which led to the creation of a unique master's degree program in computational finance at CMU involving the Department of Statistics, the Department of Mathematical Sciences, the Tepper School of Business and the Heinz College.

Lehoczky collaborates with faculty and graduate students from CMU's Department of Electrical and Computer Engineering, SCS and the Software Engineering Institute. Major national projects like NASA's Space Station, Mars Rover and the GPS Satellite System have adopted his theories, and several IEEE computer standards incorporate Lehoczky's work.

Richard Tucker, the Paul Mellon University Professor of Applied Linguistics, will chair the committee to search for Lehoczky's replacement.

Program Helps CIT Students Navigate First Year

■ Kelly Solman

Even though Deepak Gupta (E'89, TPR'89) graduated from Carnegie Mellon more than 20 years ago, his experience as a freshman has stayed close.

A student from India, Gupta's flight to Pittsburgh marked his inaugural trip to the United States. He said he was somewhat intimidated.

"It was a new country, a new university, a new life, a new everything," he said.

Like most first-year students, Gupta had to manage academic and personal hurdles. His courses were rigorous, and he had to develop new friendships.

"When I was a freshman, it was pretty autonomous," he said. "You swam or you sank, and I was thinking it would be great to have more of a bonding experience between freshmen."

Gupta and his wife, Sunita, have become avid supporters of many student organizations and outreach programs at the university — particularly the College of Engineering's (CIT) First-Year Experience Program, which they endowed in 2009.

The program focuses on social engagement, academic advising and professional development. It offers networking events for alumni and students, research information sessions, public speaking workshops, real-world engineering experiences and more.

It aims to increase students' sense of community at the university and help them navigate their career paths.

Gupta said in business and aca-

demia it's all about working with others.

"It's about getting people aligned with you, convincing people, bringing people along through good leadership," he said. "It's about getting buy-in from people on an idea that you have. How do you lead a team? How do you set up a convincing argument? Learning how to interact with people is so critical to everything you will do in life."

Korey Haug (E'15) remembers attending a networking event as a freshman.

"It's incredibly powerful," Haug said. "It's a good opportunity to see what those interactions look like and how they happen. I saw as I moved along through the courses in my major, that my courses enabled me to build on that foundation."

Jenna MacCarly (E'16) said she benefitted from several events.

"The Real World Engineering opportunity was fantastic. It allowed me the chance to visit Silicon Valley to talk to engineers in their workplace and discover more about different companies' cultures," MacCarley said. "It helped me think about employment opportunities early on and start my professional network."

MacCarley said another activity, called Major Declaration Night, made her feel connected to people in her major, electrical and computer engineering, and CIT.

"It was the first time we really all came together to bond and celebrate our academic accomplishments, of now and

PHOTOS BY LARRY RIPPEL

FIRST-YEAR ENGINEERING STUDENTS HELP ORGANIZE THE UNIVERSITY'S ANNUAL TOYS FOR TOTS DRIVE. THIS YEAR'S DRIVE KICKED OFF WITH A GINGERBREAD HOLIDAY VILLAGE DISPLAY AT THE PITTSBURGH ATHLETIC ASSOCIATION.

Entrepreneurial
University Sees Unprecedented Growth in Startups

■ Heidi Opdyke

With all of the options in today's energy market, a Carnegie Mellon startup is helping residential consumers understand their choices.

Lumator's mission is to help consumers reap the benefits of deregulated markets. The team of computer scientists and MBA graduates is using statistical artificial intelligence and behavioral game theory to predict the best match between consumers and rate plans. The technology was developed in the Machine Learning Department.

The startup is just one of a record 36 startups produced by CMU's award-winning professors and students in 2013.

CMU President Subra Suresh revealed the record and highlighted some of the startups' accomplishments at LaunchCMU, a research and entrepreneurial showcase presented by the university's Center for Innovation and Entrepreneurship (CIE).

He said CMU has spun off more startup companies per dollar of federal research money spent, than any other university in the country.

"This is a remarkable statistic," Suresh said. "This is literally bang for the buck."

In 2012, CMU was one of the five top universities in the country to attract venture capital funding.

"Given the fact that CMU is not located in a metropolitan area on the coast, it's a remarkable achievement," President Suresh said. "There are much bigger universities, universities with medical schools on either coast, where there is a much bigger venture capital cohort."

Alumnus Bruce McWilliams, chairman of the Research and Technology Commercialization Committee of CMU's Board of Trustees, kicked off the event by acknowledging the role of the CIE and

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CMU President Subra Suresh revealed the record number of startups and highlighted some of their accomplishments at LaunchCMU, a research and entrepreneurial showcase presented by the university's Center for Innovation and Entrepreneurship.

CMU's Center for Technology Transfer and Enterprise Creation in helping faculty, students and alumni to launch new ventures.

"Carnegie Mellon has shown that innovation can be encouraged and strengthened. Through streamlined university policies and investment in support for faculty and students with interests in entrepreneurship, the university is expanding its impact and creating an example for other research institutions

around the world," said McWilliams, president and chief executive officer of SuVolta Inc.

The first LaunchCMU event took place in Silicon Valley in May. Lumator was among the companies who were introduced then.

"We were very fortunate to have shared the stage at the inaugural LaunchCMU event," said Lumator CEO Prashant Reddy (CS'13). "It was fantastic to see heads nodding during

my pitch and to find out afterward that they belonged to some very prominent investors.

"Combining faculty research talks with startup pitches attracted an audience that was able to engage deeply in Q&A on the technical aspects of Lumator during the breakout sessions," Reddy said. "The insight I gained there has helped us refine Lumator's business model and get product to market quicker than we had planned."

More than 1,000 companies across industries such as robotics, software applications, energy, health care and finance have had roots at CMU. These companies create jobs across the United States and internationally, with the highest concentrations in Pittsburgh, Silicon Valley and India.

This year's startups include:

- PECA Labs, a medical device company that has developed a heart valve with the potential to save thousands of children from undergoing repeated open heart surgeries;

- PieceMaker Technologies, a company marketing the PieceMaker 3D printer, software and support services to allow stores to print and deliver goods on demand; and

- SolePower LLC, a company commercializing power-generating shoe insoles for charging portable electronics such as cellphones and GPS devices.

Other commercialized technologies created by CMU companies over the past five years include Duolingo, an app with which people can learn languages for free while simultaneously translating on the Web; and intelligent and adaptive traffic signals being developed by Surtrac, Inc. to cut down congestion, save people time in traffic and reduce auto emissions.

Simon Institute To Drive Educational Technology

through the use of science and technology. The GLC is dedicated to open sharing of data and best practices among institutions and across sectors to improve learning outcomes for all.

"This council and the Simon Initiative arrive at a critical time for educators and students alike," said CMU President Subra Suresh. "The world is experiencing an educational revolution, but there has not been sufficient effort to date to address the fundamental question: Are students using these technology platforms really learning successfully?

"Carnegie Mellon has been studying how people learn with technology since the 1950s; working together with our council colleagues, our goal is to create guidelines and best practices that ensure academic rigor and successful learning for students worldwide, Suresh said."

"Advances in learning science and technology offer transformative potential in education and training nationwide, supporting the work of excellent educators to address longstanding issues of equity and accelerating the country's return to educational leadership," said U.S. Secretary of Education Arne Duncan. "We as a country need to implement more proactive approaches to realizing that potential in education,

as we have in other sectors. Providing a platform that can attract world-class talent and significant public and private resources is a critical step forward. Efforts like this new one from Carnegie Mellon will advance this vital conversation."

President Suresh, former director of the National Science Foundation, will chair the council. Other GLC members include leaders from academia, industry and technology. They are:

- Anant Agarwal, President, edX;

- Tan Chorh Chuan, President, National University of Singapore and Chair, Global University Leaders Forum of the World Economic Forum;

- Anoop Gupta, Distinguished Scientist, Microsoft Research;

- Daphne Koller, Co-founder, Coursera;

- Alan Leshner, Chief Executive Officer, American Association for the Advancement of Science and member, National Science Board;

- Peter McPherson, President, Association of Public and Land-grant Universities;

- Mark Nordenberg, Chancellor, University of Pittsburgh;

- Hunter Rawlings, President, Association of American Universities;

- Andrew Rosen, Chairman and CEO, Kaplan;

- Alfred Spector, Vice President of Research, Google;

- Suzanne Walsh, Deputy Director, Postsecondary Success, Bill & Melinda Gates Foundation and member, World Economic Forum, Global Agenda Council on the Future of Universities; and

- Carl Wieman, Nobel Laureate and Professor of Physics and Education, Stanford University.

CMU's history in the learning sciences began in the 1950s, when Simon and CMU colleagues, including Allen Newell, advanced the fields of cognitive psychology and artificial intelligence and developed one of the first computer-based theories of learning.

Since then, the university has been at the forefront of understanding how people learn, through such activities as the development of computer tutors based on cognitive learning technology, learning games and courses.

Nagin Wins Criminology Award

the development of evidence showing that imprisoning offenders generally fails to reduce repeat offenses, and more often may increase crime rates, relative to community corrections options. His work helped to support the first decline in four decades in the U.S. incarceration rate, the world's highest.

Nagin also led the U.S National Research Council's Committee on Deterrence and the Death Penalty in 2012. The committee's report challenged presumptions about the death penalty's ability to deter potential murders and concluded "research to date on the effectiveness of capital punishment on homicide is not informative about whether capital punishment decreases, increases or has no effect on homicide rates."

A three-time alumnus of CMU, Nagin earned his bachelor's and master's degrees from the Graduate School of Industrial Administration (now the Tepper School of Business) in 1971. He completed his doctorate at the School of Urban and Public Affairs (now the Heinz College) in 1976.

Nagin is the second Heinz College faculty member to win the Stockholm Prize in Criminology, which was established in 2006. Alfred Blumstein, the J. Erik Jonsson University Professor of Urban Systems and Operations Research, received the award in 2007.

Inauguration Ushers in 9th President

Lanyon, and undergraduate and graduate student representatives.

Alumni Association President Toni Ungaretti (MM'70) presented Suresh with a kilt and plaid boxer shorts, and English Professor Jim Daniels read a special poem he wrote for the ceremony, titled "Rivers."

In his keynote address, Eric Schmidt, executive chairman of Google and a former CMU trustee, praised CMU as a "mythical place of achievement" where the field of computer science was created. He called CMU a "center of innovation, problem-solving and wealth creation," and said Suresh is the perfect combination for CMU. He called Suresh "a great leader for a great institution."

Schmidt remarked how Andrew Carnegie's original plan called for a home for the arts to be built alongside

PHOTO BY KEN ANDREYO

PHOTO BY KEN ANDREYO

ABOVE: TONY AWARD-WINNER PATINA MILLER (A'06) SINGS A SONG BY STEPHEN SCHWARTZ (A'68). LEFT: VICE PRESIDENT MICHAEL MURPHY DISPLAYS THE KILT PRESENTED TO PRESIDENT SURESH BY ALUMNI ASSOCIATION PRESIDENT TONI UNGARETTI (MM'70).

an institution focusing on training and technology.

"[CMU] is known for, obviously, its computer and engineering work, but let's not forget the School of Drama is celebrating 100 years in 2014, and the School of Music just celebrated its centennial in 2012," Schmidt said.

"Now we have a new leader who is the perfect combination to lead us forward," he said.

Carnegie Mellon has a history of philanthropists who have crossed boundaries to transform lives. One such example is David A. Tepper (TPR'82). As part of the inaugural celebration, President Suresh announced a $67 million gift from Tepper's charitable foundation to create the David A. Tepper Quadrangle. The new Tepper Quad builds on CMU's strengths, creating new interdisciplinary interactions for learning and research and connecting innovation to the business community.

Rivers

BY JIM DANIELS FOR THE INAUGURATION OF CARNEGIE MELLON PRESIDENT SUBRA SURESH

A river cannot turn around
in the face of mountains, soldiers,
borders, denial. We look back,
but we can't go back. The past
streams behind us, and a river goes

where it needs to go. A river carries on.
A river curls and bends. When a river changes
path, it changes forever, and we are transformed
having crossed the map's lines
having crossed the book's borders,

trusting the heart's familiar rhythm.
The heart is our guide, the heart
that contains all numbers, solutions, problems.
The heart is our river, too, the silent guide
in search of peace, no matter how we connect

the stars. The river accepts all other rivers.
Rivers that feed it, make it stronger.
One river. Two rivers. More. Do not watch
from the shore, anchored, unchanged.
The earth is moving. We cannot

stand still. The river says come on in,
the water's fine. The river is lying
just a little. Its rough, rocky rapids
can pull us under. We hold on tight,
hand grasping hand.

Here, where two rivers make one,
we create islands of discovery,
bridges of innovation. Here, where ideas
meet, unite, and carry on, the river sings
a song of change, an invitation to dance

together. Here, in this room of pomp
and plenty, the dazzle of a new source,
let us all close our eyes and imagine:
we are on a river at night, together, and alone.
Listen to the sound of knowledge and change:

it never sleeps. It crosses borders,
it finds its way.

Largest Gift by Alumnus To Create Academic Hub Along Forbes Avenue

the foremost entrepreneurial academic institution in the nation," Tepper said. "CMU has a long history of providing the world with innovative thinkers, and the establishment of a true hub for entrepreneurship will help create the next generation of global leaders."

The gift, the largest from a CMU graduate and for a CMU building project, was announced Nov. 15, the

initiatives, including entrepreneurship and technology-enhanced learning. It also will enable the university to leverage other highly ranked campus programs, such as business, engineering, computer science, energy, design and life sciences, to accelerate the transfer of new technologies into the marketplace, to create new integrated degree programs and to expand new research and

TEPPER SCHOOL DEAN ROBERT DAMMON, DAVID TEPPER AND PRESIDENT SUBRA SURESH

same day as President Suresh's inauguration and the 113th anniversary of the founding of Carnegie Mellon by Andrew Carnegie.

The founder of Appaloosa Management and a 1982 MBA graduate, Tepper is extending his support of CMU at a time when bridging the gulf between technology, business and the sciences is critical to solving some of the world's most challenging issues.

"David Tepper is a visionary, both as a businessman and a philanthropist, and we are grateful for his generous support of the university and the business school that bears his name," Suresh said. "Carnegie Mellon's culture is historically holistic, integrating research and learning among individual schools and academic disciplines."

Over the past decade, Tepper has committed more than $125 million in gifts to CMU, including donating $55 million to Carnegie Mellon in 2004 to rename the Graduate School of Industrial Administration. He serves on the university's board of trustees and as a member of the Business Board of Advisers for the Tepper School of Business.

The Tepper Quadrangle is the first expansion of the university's north campus and will be located on a 4.5-acre site, on what is now the Morewood parking lot. It will be designed to facilitate high levels of cross-campus collaboration and bring together interdisciplinary

education opportunities.

The Tepper Quadrangle represents an initial investment of $201 million by the university, which includes the new business school. The establishing gift by Tepper launches this expansion along Forbes Avenue in Pittsburgh's Oakland neighborhood and will include a new university welcome center. The LEED-Gold certified facility will house the Center for Innovation and Entrepreneurship, the Center for Technology Transfer and Enterprise Creation, and many quality of life enhancements for students and faculty, including larger and better classrooms, meeting and collaboration spaces and a fitness center and café.

"There are natural intersections between the business school and the research and teaching taking place at each of the seven schools and colleges at Carnegie Mellon," said Robert M. Dammon, dean of the Tepper School of Business. "The new home for the business school will enable us to enhance our undergraduate and graduate programs in business and economics, expand the possibilities for innovative research and interdisciplinary degrees, and allow us to offer a flexible technological framework that anticipates the needs of next-generation learning. The combined involvement of faculty, students, alumni and staff from across the CMU campus is a rare, powerful resource."

PHOTO BY KEN ANDREYO

IN HIS KEYNOTE ADDRESS, ERIC SCHMIDT CALLED CMU A "MYTHICAL PLACE OF ACHIEVEMENT."

The Tepper Quad will sit along Forbes Avenue between Morewood Avenue and Craig Street, an area where Suresh envisions great growth.

"Working with the University of Pittsburgh and the many collaborators in the city, county and region, Carnegie Mellon has the opportunity to transform Forbes Avenue into one of the most vibrant and prominent innovation corridors in the United States," Suresh said.

Suresh, who took office on July 1, shared some of the history of the institution, which points the way forward for the university.

Suresh reflected on some of the presidents and scholars who came before him. He described Nobel laureate and CMU faculty member Herbert Simon as a pioneer in the areas of artificial intelligence and machine learning, noting his spirit is still very much alive.

Earlier in the week, the university

announced the Simon Initiative, a university-wide effort to accelerate the use of learning science and technology to improve student learning.

"Simon grasped the potential power that computing would bring to the world," Suresh said. "He also led by example, embracing the profound value of multiple disciplinary perspectives in conducting research that, to this day, enriches the culture of teaching, creativity and discovery on this campus.

"Carnegie Mellon owes much to such scholars and pioneers. We also owe much to the eight previous presidents of Carnegie Mellon, Arthur Hamerschlag, Thomas Baker, Robert Doherty, John Warner, Guy Stever, Dick Cyert, Robert Mehrabian and Jerry Cohon, whose hard work and passion for this campus have shaped its intellectual vitality," Suresh said.

Meltzer to Suresh: "You Seem Like Us"

■ Piper Staff

Carnegie Mellon's longest-serving faculty member Allan Meltzer, Allan H. Meltzer University Professor of Political Economy, shared remarks as part of the investiture ceremony.

He told President Subra Suresh "You seem like us."

"Frankly, we seem like you. Like us, you achieve much from a surprising background," Meltzer said. "Like us, you seem to be a worker bee, committed to completing the task at hand while leaving behind a notable achievement."

A member of the faculty since 1957, with, as he says time off for "good behavior," Meltzer has known five of the previous eight presidents. He said Carnegie Mellon has benefitted

from vision and leadership.

"Richard Cyert could not tolerate being second rate in anything. President Suresh and Cyert would see eye to eye," he said. "Jerry Cohon built on the foundation he found here — a foundation that stressed on solving real problems, particularly those that lie on the border of different areas."

Meltzer said Suresh and his family would enjoy living in Pittsburgh.

"May you succeed in building your and our trajectory. May we all enjoy the results of your accomplishments. May we continue to enjoy the excitement that comes from new ideas and new achievements," he said.

Robotic Smiles

■ Sarah Nightingale

Making a robot smile can be a complex process. And a winning one.

Amna AlZeyara (CS'13), who has been working to help Carnegie Mellon Qatar's roboceptionist, Hala, show expressions such as joy and surprise, won first place in the undergraduate research competition at the 2013 Grace Hopper Celebration of Women in Computing Conference in Minneapolis.

"To make a robot smile, the action units need to be adjusted accordingly," AlZeyara said, referring to the activity that occurs in human muscles to produce different facial expressions.

Hala's programming allows for similar controls.

A slight tweak of the 3D animated robot's eyebrows, eyes, cheeks or mouth can turn a look of sadness into one of happiness or anger.

AlZeyara is working on identifying and developing a series of facial expressions for Hala, who interacts with visitors, to help engage users by enhancing the non-verbal aspects of human-robot communication.

"Amna has taken on increasingly challenging research projects during her time at CMU-Q. We have all witnessed her remarkable development into a serious researcher and she is the first CMU-Q student who has been honored twice for her research accomplishments," said Kemal Oflazer, director of the Computer Science Program at CMU-Q.

"When one of your students is recognized in this manner, in a tough competition against many similarly qualified candidates from around the world, we have every reason to be proud. This brings tremendous visibility to CMU-Q Computer Science Program and its accomplishments."

AlZeyara has traveled twice to the conference.

"Each time it has been an amazing opportunity to meet other women and learn from leaders in the field," she said. "I am very excited to be selected as one of the student winners, and it has inspired me to continue my hard work toward becoming a computer scientist."

After graduation, AlZeyara plans to finish her master's degree and then work as a researcher.

"We are very proud of Amna, who has shown us with this award that she is among the best and brightest computer science students — not only in Qatar and the region, but across the globe," said Ilker Baybars, dean of Carnegie Mellon University in Qatar.

Organized by the Anita Borg Institute for Women and Technology and the Association for Computing Machinery, the Grace Hopper Conference is one of the most prestigious technical conventions for women in computing, bringing both their research achievements and career interests to the forefront.

FROM LEFT IS CO-CHAIR OF THE 2013 GRACE HOPPER CELEBRATION OF WOMEN IN COMPUTING CONFERENCE AND PURDUE PROFESSOR FATMA MILI, SMITH COLLEGE STUDENT JULIE B. EDWARDS, CMU STUDENT AMNA ALZEYARA (CS'13) AND ASSOCIATION FOR COMPUTING MACHINERY'S ACM-W CHAIR VALERIE BARR. ALZEYARA, EDWARDS AND INDIAN INSTITUTE OF TECHNOLOGY, KANPUR, STUDENT KRITIKA SINGH (NOT PICTURED) WERE RECOGNIZED FOR THEIR RESEARCH.

Social Change

Semester-long Travel Experience Opens World to Students

■ Kelly Solman

The semester-long trip was expected to provide opportunities for students to change the world. What the students didn't expect was how the trip would change them.

During Carnegie Mellon's first Social Change Semester, 10 students traveled to Qatar and India where they worked on projects in education, water management, alternative energy, women's empowerment, sustainable agriculture and village industries.

"We're a family. And as the semester progressed, our family just kept getting bigger," said Nico Slate, associate history professor, who co-led the trip with his wife, Emily Mohn-Slate, a special instructor in CMU's English Department.

The students who participated last spring are pursuing majors that range from information systems and biology to global studies and business administration.

The group spent time in Doha, Qatar, working with CMU-Qatar students to teach English to migrant workers from South Asia. They also spent time in rural central India; Chennai, one of India's largest cities, where they led programs designed to help underprivileged children learn how to become leaders; and in New Delhi, where they met with leaders in business, government and nonprofit sectors.

The projects they engaged in were all projects of the Kamalnayan Jamnalal Bajaj Foundation, which was co-founded by the parents of CMU Trustee Kushagra Bajaj (TPR'97).

"The villagers we helped became our friends and teachers," Slate said. "All that we learned and did was a result of the relationships we built with our partners, especially the Bajaj Foundation, the Avanti Fellows and Visions for Global Empowerment."

Marcy Held (DC'13) was surprised by all the things they were able to do, from tutoring to partnering with NGOs to making a website.

"I learned that we can't always control how much time we will have in a certain situation, but we can control how we allow that time and those experiences to affect who we choose to become and how we decide to be in the world," Held said. "The experience was a lot of work, but everything fit together and ended up being really great."

Alexandria Hernandez (DC'15) saw the experience as an opportunity to go beyond what she was learning in her textbooks. It was her first time outside of the United States.

"It was powerful. I was able to interact directly with people I wanted to serve in order to figure out their needs firsthand and determine how to accomplish change," Hernandez said.

She recalled one student in a leadership workshop she conducted who struggled with self-confidence.

"The young girl had an overwhelming fear of not being smart enough to be effective," Hernandez said. "I helped her to overcome that. I taught her how to take good notes and pointed out her progress as she made it. What she needed was a cheerleader, and I am grateful I was able to be that for her."

Slate said he hopes the semester can serve as a model for future service-based semesters abroad — at CMU and elsewhere. If they can get the funding, Slate said he and his wife would love to make the Social Change Semester experience available to students on an ongoing basis.

"A lot of us went into the semester thinking we were going to change the world and do these fantastic service projects," Hernandez said. "But in a lot of ways, the experience changed us."

Program Helps CIT First-Year Students

the future," MacCarley said. "It made me proud to be a CMU engineer."

Students in the program also organize service-learning projects. One event is working with CMU's annual Toys for Tots drive.

Kurt Larsen, assistant dean of undergraduate studies at CIT, said the program has made a difference.

"I feel that the First-Year Experience program has played a significant role in helping students acclimate to a challenging but rewarding environment at CMU. Students have more ways to explore majors and career options, making more informed decisions about their future," Larsen said. "It has also helped students to fully exploit the curricular and meta-curricular opportunities to enhance their education."

Gupta stressed the importance of being able to manage finances as a student and in the real world.

"When you go off to college, you have a lot more freedom. You have to figure out how to manage your time, and manage your money, and I know from my own kids that some don't know how to handle that," he said.

Gupta said the wide range of majors and educational opportunities available means students have many decisions to make including what they plan to do after graduation.

"I know a lot of engineers who never ended up being engineers. They ended up being a lot of other things," he said. "To me, engineering is one of the best degrees to get. You learn how to analyze, break stuff down into modules and synthesize it back into solutions."

Holiday Classic

Annual Concert To Include Seasonal Favorites

■ Dana Casto

The holiday season at Carnegie Mellon is merry and bright when the university's philharmonic and choirs join together to perform the Holiday Concert.

The annual favorite, conducted by Maria Sensi Sellner, interim director of choirs, will feature holiday classics such as Irving Berlin's "White Christmas" and other well-known festive music.

"The holiday concerts have been a gift to the community for more than 60 years, and it's our pleasure to be part of this annual tradition," said School of Music Head Denis Colwell.

The program will include Bach's "Cantata Jauchzet Frolocket" and "Dona Nobis Pacem" from "Mass in B Minor."

In addition, it also will include seasonal selections such as the "Wexford Carol," Holst's "Wassail Song," Finzi's "In Terra Pax" and Bernstein's "Chichester Psalms."

WHAT: ANNUAL HOLIDAY CONCERT

WHEN/WHERE: 8 P.M., THURSDAY, DEC. 5 AT THE CARNEGIE MUSIC HALL IN OAKLAND, AND NOON, FRIDAY, DEC. 6, AT THE GREAT HALL, COLLEGE OF FINE ARTS

Each of the concerts will be webcast live at music.cmu.edu/pages/webcasting.

For the second year, TIAA-CREF is serving as sponsor of the Holiday Concert.

For more information about the Annual Holiday Concert, visit http://music.cmu.edu.

"We are proud once again to be a sponsor of the 2013 Carnegie Mellon University Holiday Concert," said Larry Maher, director of relationship management for TIAA-CREF. "Congratulations to your talented and dedicated faculty, staff and students who work tirelessly to provide a performance to remember year after year."

Both performances are free for students, faculty and staff with a valid ID. General admission to the Thursday evening concert is $5. All CMU faculty, staff and students may receive up to two free tickets for the performance by visiting the online box office at http://cmumusic.showclix.com or by going to the School of Music website, music.cmu.edu/events. During checkout, faculty should use the code "CMUFaculty" and staff should use "CMUStaff."
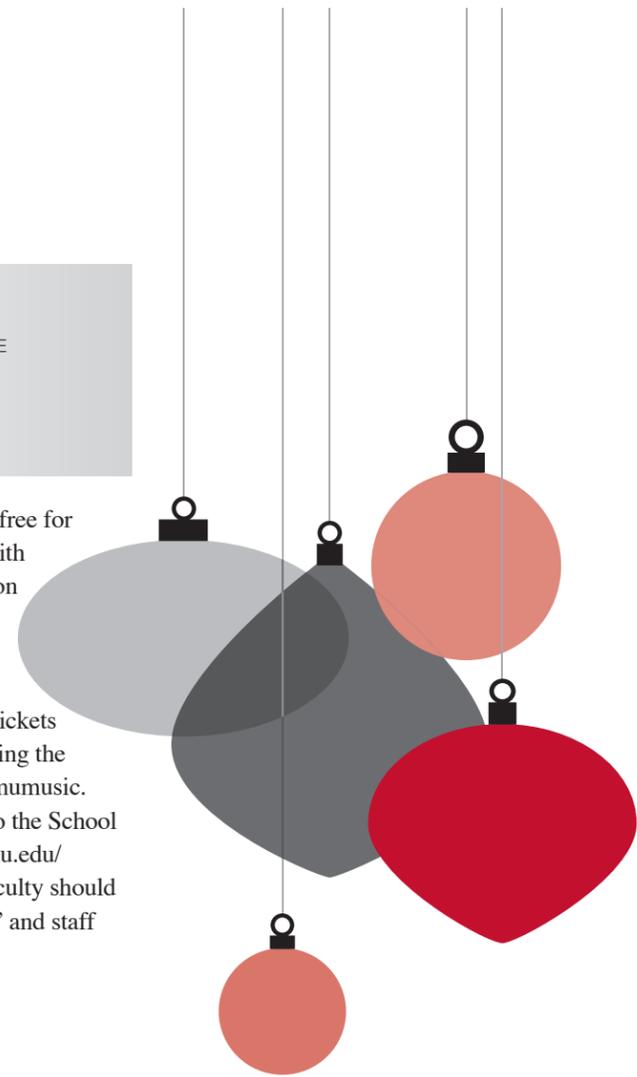
"The Sound of Music"

Student, Alum To Appear in Live Broadcast of Classic Musical

■ Kelly Solman

Another rehearsal extends well into the night, leaving musical theater senior Michael Campayno (A'14) and Tony Award-winning CMU alumnus Christian Borle (A'95) dog-tired.

But in a good way.

Campayno, Borle and their castmates — among them, Carrie Underwood — will perform the Rodgers and Hammerstein classic "The Sound of Music," live on NBC at 8 p.m. (EST), Dec. 5.

Live TV can be as challenging as performing on Broadway, but in some ways, less forgiving. There's no audience for feedback and close-ups can catch more details than someone in a theater might see.

Campayno said their goal is to make sure every action, sound and look as precise as they were in rehearsal while reacting to what's happening around them.

"If one little mistake happens, we have to know how to recover. If we're listening, and if we're in the moment, everything should be fine," Campayno said.

Campayno competed with hundreds of actors to land the role of Rolf, the young messenger who falls in love with Captain von Trapp's oldest daughter, Leisl.

While he is taking time out from his studies for the experience, he will still graduate on time. The School of Drama considers rare offers such as these to students in good standing as internships.

Don Wadsworth, professor of voice and speech in CMU's School of Drama, has a theory on why Campayno was chosen.

"In musical theater you tend to have a lot of singers, not singer/actors. Michael is a strong actor, and he probably was able to bring more to that role than other singers," Wadsworth said.

Campayno, a Forest Hills native and graduate of Pittsburgh's Central Catholic High School, won the local 2008 Gene Kelly Award for Best Supporting Actor. He's in good company with Borle, who grew up in Fox Chapel.

"Christian is another musical theater performer who is a strong actor," Wadsworth said of Borle, who starred in NBC's musical-drama series "SMASH" and plays von Trapp's friend, Max Detweiler.

"Christian won a Tony Award for his role in 'Peter and the Starcatcher,' and he just appeared in CBS' hit drama 'The Good Wife.' That's what we try to do at Carnegie Mellon. We try to build actors who can be cast in more than one arena, actors who can perform on Broadway and very much hold their own in serious TV shows or straight dramas."

While "The Sound of Music" may be best known for its songs, Campayno said director Rob Ashford is letting the drama of World War II approaching come through in the text.

"The musical is, in fact, as tense and dramatic as a straight play," said Campayno, who described the experience of playing Rolf as rewarding.

CHRISTIAN BORLE (A'95) AND MICHAEL CAMPAYNO (A'14) ARE PLAYING MAX DETWEILER AND ROLF IN "THE SOUND OF MUSIC," LIVE ON NBC.

"Rolf's backstory isn't continuous or specific; Rob left that up to me to create. And I've been finding so much depth to the character," Campayno said.

"He's a young kid who wants to have purpose in life. A working-class boy who could, at best, only amount to a mailman in life, Rolf sees the Nazi youth as a way to have status and power, admirable traits. And he does all of this so that he can be good enough for Leisl. They are kind of tragic lovers."

Wadsworth noted similarities between Ashford, who studied dance in Pittsburgh at Point Park University and is an alumnus of the Pittsburgh Civic Light Opera, and Campayno, who spent the summer as the lead male understudy in the Pittsburgh CLO's Cabaret performance of "Side by Side by Sondheim."

"I would imagine that Rob, who has a varied background himself, probably appreciated someone like Michael who had more range," Wadsworth said. "Directors throw a lot at you. They say, 'Try this. Try that.' A good actor like Michael can handle that."

Wadsworth said he can't remember the last time a musical was performed live on network television.

"Any live performance on television is a pretty remarkable thing. So, the fact that this is a huge Broadway musical is pretty spectacular," he said.

Robotics Initiative

NSF Awards $7 Million for Seven Projects

■ Byron Spice and Chriss Swaney

Bridge inspectors, surgical tools and aids to blind travelers are among seven new Carnegie Mellon research projects being sponsored through the National Robotics Initiative (NRI).

In the latest round of grants for the initiative, the National Science Foundation awarded more than $7 million to CMU researchers to develop robots that can work with humans.

"The great promise of robots is to extend human skills and enhance human lives," said Matt Mason, director of the Carnegie Mellon Robotics Institute. "The National Robotics Initiative is helping researchers here at Carnegie Mellon and across the country make promise a reality."

Among the new projects is a large, multi-university, interdisciplinary effort led by Sanjiv Singh, research professor in the Robotics Institute, to develop an autonomous robotic inspection assistant. The goal is to improve the assessment of aging bridges and other critical infrastructure by combining human judgment with machine intelligence.

"Current inspection methods for bridges, dams and other infrastructure often require expensive, specialized equipment and are potentially dangerous for inspectors who must reach difficult-to-access areas," Singh said. "This project will use small, low-flying robots, coupled with 3D imaging and advanced planning, modeling and analysis, to provide safe, efficient and high-precision assessment of critical infrastructure."

PHOTO BY LUKE YODER

AMONG THE NEW PROJECTS IS AN AUTONOMOUS, LOW-FLYING ROBOT WITH 3D IMAGING THAT WILL PROVIDE SAFE, EFFICIENT AND HIGH-PRECISION ASSESSMENT OF CRITICAL INFRASTRUCTURE.

In addition to other members of the Robotics Institute, the three-year, $2.3 million project will include researchers in the departments of Civil and Environmental Engineering at CMU and Northeastern University.

Howie Choset, professor of robotics, is a co-principal investigator in another large, multi-university project that will provide surgical robots with a new kind of machine intelligence that will enhance minimally invasive surgery. The five-year, $3.6 million project includes researchers at Vanderbilt University and Johns Hopkins University.

The researchers will work to establish the concept of "complementary situational awareness," which takes advantage of a robot's ability to gather sensory information as it works and to use that information to guide its action. In particular, they hope to compensate for a surgeon's inability to directly see organs and other tissues when they are performing minimally invasive surgery. Using a technique called simultaneous localization and mapping, or SLAM, the researchers will work to have mobile robots navigate unexplored areas by creating maps as they go.

The idea is based on algorithms developed for navigating buildings, landforms and streets.

Three NRI projects will focus on individual safety — helping visually impaired people safely travel and navigate through unfamiliar environments, assisting individuals with stroke-related mobility impairments and serving as scouts for rescuers responding to underground mine disasters.

Two additional projects focus on developing better simulation tools for designing and testing robot systems and developing methods for modeling, design and control of large numbers of micro-robots.

NEWS BRIEFS

United Way Needs Your Support

Carnegie Mellon's 2013 United Way campaign is underway and will run through Dec. 13.

According to Campaign Chair Everett Tademy, in the first three weeks of the campaign nearly 100 donors across campus have pledged more than $50,000. To reach the university's goal of 10 percent participation, about 400 more donors are needed. Last year the university community raised more than $175,000 for United Way and the health and human service organizations it supports.

You can help make this year a success by incorporating the theme "Live Generously" through donating, advocating or volunteering for CMU's campaign.

Visit www.cmu.edu/hr/unitedway to make your pledge and find out how to volunteer with local organizations.

Inkblots Used To Improve Security of Online Passwords

Carnegie Mellon computer scientists have developed a new password system that incorporates inkblots to provide an extra measure of protection when, as so often occurs, lists of passwords get stolen from websites. This new

type of password, dubbed a GOTCHA (Generating panOptic Turing Tests to Tell Computers and Humans Apart), would be suitable for protecting high-value accounts, such as bank accounts, medical records and other sensitive information.

To create a GOTCHA, a user chooses a password and a computer then generates several random, multi-colored inkblots. The user describes each inkblot with a text phrase. These phrases are then stored in a random order along with the password. When the user returns to the site and signs in with the password, the inkblots are displayed again along with the list of descriptive phrases; the user then matches each phrase with the appropriate inkblot.

Benter Foundation Endows Math Scholarship

Carnegie Mellon has received $1 million from The Benter Foundation to establish an endowed undergraduate scholarship for students majoring in mathematical sciences. The Benter Foundation Mathematics Scholarship recognizes Carnegie Mellon's leadership in applied mathematics and honors former Carnegie Mellon President Jared L. Cohon.

"I'm delighted to endow an undergraduate scholarship in mathematics at Carnegie Mellon. Supporting talented students is critical today if we are to grow innovative leaders in basic research, computer science, business and other fields that rely on quantitative skills," said Bill Benter, president of The Benter Foundation Board of Directors. "Throughout his tenure at Carnegie Mellon, Jared Cohon vigorously supported the idea of creating access to higher education and the quantitative skills needed to innovate. We are pleased to continue this legacy through this scholarship."

Book Looks at Writer During the Cold War

A new book by Carnegie Mellon Associate Professor of English Richard Purcell reveals another side of Ralph Ellison, a writer — like others during the Cold War — who was supported by covert government funds to function as a literary ambassador at home and abroad.

"Race, Ralph Ellison and American Cold War Culture" looks at the period following World War II when writers and literary critics — both black and white — debated how African-Americans were represented in

literature, which was referred to as the "Negro Problem."

As the Cold War unfolded, many of the debates began to appear in journals, conferences and other events that were directly funded by U.S. and British intelligence agencies. Purcell used never before published materials from Ellison's papers at the Library of Congress to fully understand the acclaimed literary figure's thinking of the Negro Problem within the shadow of governmental influence.

"Many critics gloss over or downplay this aspect of Ralph Ellison's career," Purcell said. "It's an example of the political usages of literary culture. Ellison's work gives us the opportunity to tell a story about race and racism during the Cold War that is complicated and messy."

INI Student Receives Fellowship

Grace Kihumba has received a fellowship from Carnegie Mellon's Information Networking Institute (INI) and Alta Associates' Executive Women's Forum (EWF) on Information Security, Risk Management and Privacy to pursue her graduate studies.

A Golden Opportunity

Osher Instructors Tout Collaborative Living on NBC's "Today"

■ Abby Simmons

Pittsburgh and Carnegie Mellon has its own version of "The Golden Girls" — Karen Bush, Louise Machinist and Jean McQuillin, study leaders in the Osher Lifelong Learning Institute at CMU. And the nation had a chance to meet them on NBC's "Today" show on Nov. 26.

Bush, Machinist and McQuillin — instructors for the Osher course "Shared Living Models: Intentional Community Comes to the 'Burgh" — were featured on "Life Reimagined," a monthly segment hosted by AARP's "Today" show contributor Jane Pauley. The segment highlights people older than age 50 who are trying new things such as making a career switch, learning new skills or changing their lifestyles.

The "Today" show appearance originated from a Twitter conversation. When Pauley tweeted that she was about to go on the air for her July segment, Machinist tweeted, "Hey, Jane — Hot topic: Boomer women who reimagine their lives by creating a cooperative household." Pauley responded with a request to cover their story, a nine-year adventure of shared living.

"Our experiences segued into 'encore careers' for us. We began writing, publishing and speaking about the beauties and economies of living, independently but interdependently, in community," Bush said.

The women created the website myhouseourhouse.com and published a book by the same name in June. They first taught their Osher course in 2012 and offered it again this fall along with Stephani Danes of the Pittsburgh Cohousing Group and Maria Piantanida of the Borland Green community in East Liberty.

"The Shared Living Models course has proven to be a wonderful addition to our curriculum, as it provides fodder for stimulating conversation and serious consideration of a potential lifestyle in one's retirement years," Osher Registrar/Manager Lyn Decker said.

AARP Broadcasting collected classroom footage in October following a day of filming at the study leaders' house.

"The AARP crew commented on how exciting the group made our workshop," McQuillin said.

CMU has supported Osher, formerly the Academy for Lifelong Learning, since its charter in 1992. The institute offers low-cost educational opportunities for adults, typically in their 50s to 90s, who are interested in being a part of a vibrant learning community.

Approximately 150 classes on subjects ranging from politics to cooking and astronomy are offered in each of the winter/spring, summer and fall terms.

Decker said the program has been so popular that it has reached its maximum capacity of 2,000 members. In addition, there are more than 1,000 people on a prospect waiting list. While waiting up to two years for member-

JEAN MCQUILLIAN LISTENS DURING AN OSHER COURSE THAT WAS FILMED FOR A "TODAY" SHOW SEGMENT.

ship, prospective members are invited to attend the Osher evening lecture series, day trips, select CMU events, luncheons and to fill open class seats once members have completed enrollment.

"The university is enormously generous to Osher at CMU. More than 25 faculty and staff have served as study leaders in just the past two years. Also, CMU provides our organization a learning environment in classrooms, lecture halls, office space, library support and much more," said Dean of Libraries Emerita Gloriana St. Clair, who serves as the organization's university liaison and secretary of its board of directors.

CMU students and faculty routinely invite Osher members to participate in research projects, particularly on topics related to aging and quality of life.

"Our members demonstrate the importance of lifelong learning to CMU students and provide them with an audience for their research and projects," Decker said.

Osher is part of a network of more than 120 adult lifelong learning programs that the Massachusetts-based Bernard Osher Foundation supports.

Other host sites include the University of Pittsburgh, the Pennsylvania State University, Johns Hopkins University, Duke University, Dartmouth College and the University of California, Berkeley.

The award was presented at the 11th Annual EWF National Conference in Scottsdale, Ariz. Kihumba is receiving the EWF-INI Fellowship, an educational award providing full tuition and a mentor to support her studies in the university's Pittsburgh-Silicon Valley Master of Science in Information Technology-Mobility program through the INI.

"I would like to conduct research on mobile learning and intelligent tutoring systems for mobile devices. My interest is in educational technology and e-learning, and I hope to work in a research center that has this focus," said Kihumba of Nairobi, Kenya. "I also hope to get into a doctorate program after the INI. I plan to go back to Kenya and work in the field of educational technology because it can go a long way to complement learning resources in developing countries," she said.

Marija Ilic Leads Smart Grid Research Team

Carnegie Mellon's Marija Ilic is leading a research team to show that with careful design of IT-enabled, data-driven protocols and the introduction of more interactive

binding protocols between traditional utilities and new technologies — intermittent power and responsive demand, in particular — it's possible to provide electric power reliably and efficiently.

Ilic calls the newly evolving cyber-physical energy systems intelligent Dynamic Monitoring and Decision Systems (iDyMonDS), and she's using a three-year, $1.2 million grant from the National Institute of Standards (NIST) to develop a one-stop shop to demonstrate and test this framework, and to show how it can be used to design more efficient and reliable smart grid technology.

Ilic, a professor of electrical and computer engineering (ECE) and engineering and public policy, said this "smart grid in a room" will be a test bed to see how cyber-physical systems interact with utilities.

"This hybrid setup has the potential to realistically mimic a large electric energy system with data collected from real-world instrumentation that would ultimately be able to help determine the value of new technologies and their impact on the quality and cost of electricity services, sustainability and potential for reducing pollution," Ilic said.

PSC Lands $7.6 Million Grant

■ Piper Staff

The National Science Foundation has approved a grant to the Pittsburgh Supercomputing Center (PSC) to develop a prototype Data Exacell (DXC), a next-generation system for storing, handling and analyzing vast amounts of data. The four-year, $7.6-million grant will allow PSC to architect, build, test and refine DXC in collaboration with selected scientific research projects that face unique challenges in working with and analyzing "Big Data."

"We are very pleased with this opportunity to continue working cooperatively to advance the state of the art based on our historical strengths in information technologies and to apply the resulting advances to a wide range of important scientific research," said CMU President Subra Suresh and University of Pittsburgh Chancellor Mark Nordenberg.

"The focus of this project is data storage, retrieval and analysis for what is known as Big Data," said Michael Levine, PSC scientific director. "The Data Exacell prototype builds on our successful, innovative activities with a variety of data storage and analysis systems."

Big Data is a broad field including challenges from both traditional high-performance computing and other fields of research that depend on methodologies more focused on data collection and analysis than on computation. These fields not only require very large amounts of data but also require access methods and performance beyond the capability of traditional large data stores. The Data Exacell project will directly address these required enhancements.

Socioeconomic Status a Cold Reality

■ Shilo Rea

Researchers led by CMU Psychology Professor Sheldon Cohen found an association between lower socioeconomic status during childhood and adolescence and the length of telomeres, protective cap-like protein complexes at the end of chromosomes, that ultimately affects the susceptibility to colds in middle-aged adults.

Published in "Brain, Behavior and Immunity," the study showed that children and teens with parents of lower socioeconomic status have shorter telomeres as adults. Telomere length is a biomarker of aging with telomeres shortening with age. As a cell's telomeres shorten, it loses its ability to function normally and eventually dies. Having shorter telomeres is connected to the early onset of illnesses such as cardiovascular disease and cancer, with mortality in older adults and, as Cohen first discovered earlier this year, predicts susceptibility to acute infectious disease in young to midlife adults.

This new research now links low childhood socioeconomic status to shorter telomeres and an increased susceptibility to the common cold.

Low Childhood Socioeconomic Status
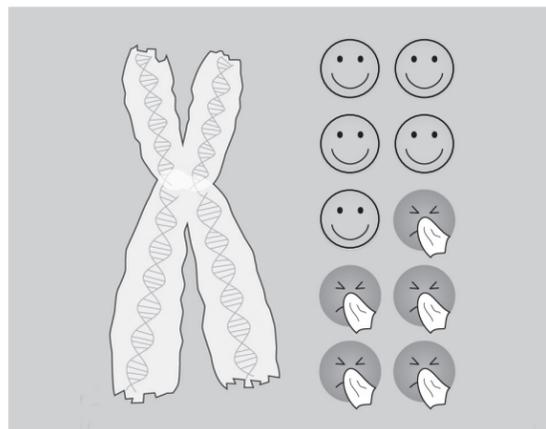
Shorter than average telomere* length, and **46%** likelihood of developing a cold

High Childhood Socioeconomic Status
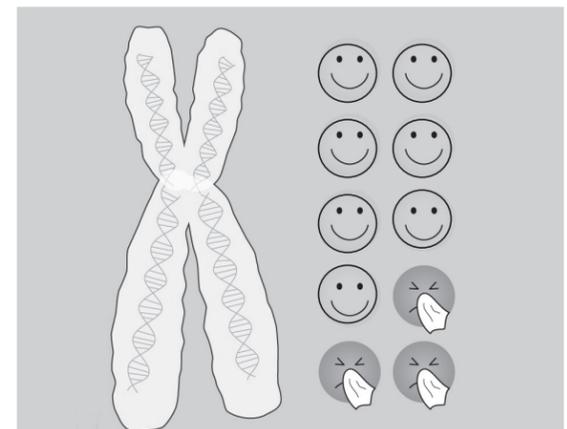
Longer than average telomere length, and **25%** likelihood of developing a cold

The telomere is a protective cap-like protein complex at the end of chromosomes

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Cooking Up Solutions
Researchers Help Put Toyota's Ideas for Good into Practice

■ Kelly Solman

The World Health Organization estimates that between 1.5 and 2 million premature deaths each year can be attributed to indoor air pollution, with most deaths occurring in developing countries due to cooking indoors over open fires with solid fuel.

Michael Taylor, a Ph.D. candidate in Carnegie Mellon's Robotics Institute (RI) traveled to a community in Uganda to get a firsthand look at the problem.

"When you tell people indoor air pollution is a big problem in Central Africa, the typical response you get is, 'well, why don't they open a window?'" Taylor said. "It's one of those things where opening a window sounds like a good idea. So if they're not doing it, there must be a good reason."

Taylor found that most of the huts in the community didn't have a window. If they did have a window, it remained shut to keep out mosquitos, other insects or rain.

"And the people were cooking in such low light situations that they tended to be hunkered down over their pots. So, even where smoke was being blown out through the roof, it still had to pass through them first," he said.

BEFORE RETURNING TO THE UNITED STATES, MICHAEL TAYLOR, KNEELING, AND JOSHUA SCHAPIRO (STANDING, SECOND FROM RIGHT), VISIT WITH A FAMILY IN UGANDA. THE FAMILY WAS USING THE DEVICE THEY DEVELOPED TO REMOVE INDOOR AIR POLLUTION FROM THEIR HUT.
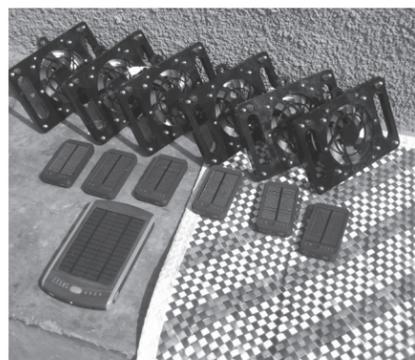
THE DEVICE, WHICH COMBINES FANS WITH LIGHTS, WAS DEVELOPED BY TAYLOR AND SCHAPIRO AND ARE READY TO BE INSTALLED IN HUTS.

A solution arose out of Toyota's "Ideas for Good" contest during which everyday people were challenged with thinking of ways to repurpose Toyota's automotive technology for contributing something beneficial to the world. Five winning ideas were selected to be prototyped at CMU, including the solar-powered fan Taylor was working on to remove pollution from huts like the ones in Uganda.

"We wanted to encourage the people we visited to keep the fan close to their fuel source," Taylor said. "So we actually added LED lights to the device because we knew they would find the light useful."

Joshua Schapiro, a research associate in the RI's CREATE Lab, said the team underestimated just how beneficial bringing that small bit of light into kitchens would be.

"A lot of the time, they're trying to illuminate their cooking with oil lamps and candles and things," Schapiro said. "So they'll drip paraffin into their food, which makes it taste awful but they have to eat it anyway because that's what they have."

The lights on the fan eliminate the need for candles and oil lamps near the food being prepared.

"We certainly wouldn't have come up with that important aspect of the solution if it wasn't for first going there and seeing to understand," Schapiro said.

Jude Tamale, an administrator for the organization (http://kyempapu.wordpress.com/) who connected CMU researchers with the Ugandan community, said, "The Create Lab Uganda Project has been so useful to our people. The smoke reduction in the kitchen saves them from smoke effects on their health. And with the solar light the children can now even review their schoolbooks from

the kitchen. A device like this would mean that families could also save on expenditure for paraffin and kerosene. Everyone wishes to have it in their families. This is a wonderful project which should be expanded to the entire district if possible."

Taylor said a lot of interesting projects exist in this area, but many tend to fail because of the way the developers tend to view these projects.

"Our prototype was successful because we took an interest in caring about the people and we made the time to learn about how and why they do things the way they do," Schapiro said. "We didn't just design our own product and tell them to use it."

Taylor said he hopes others see their project and are inspired to make a similar impact. The CREATE Lab, aimed at empowering communities with technology, is directed by Robotics Professor Illah Nourbakhsh.

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